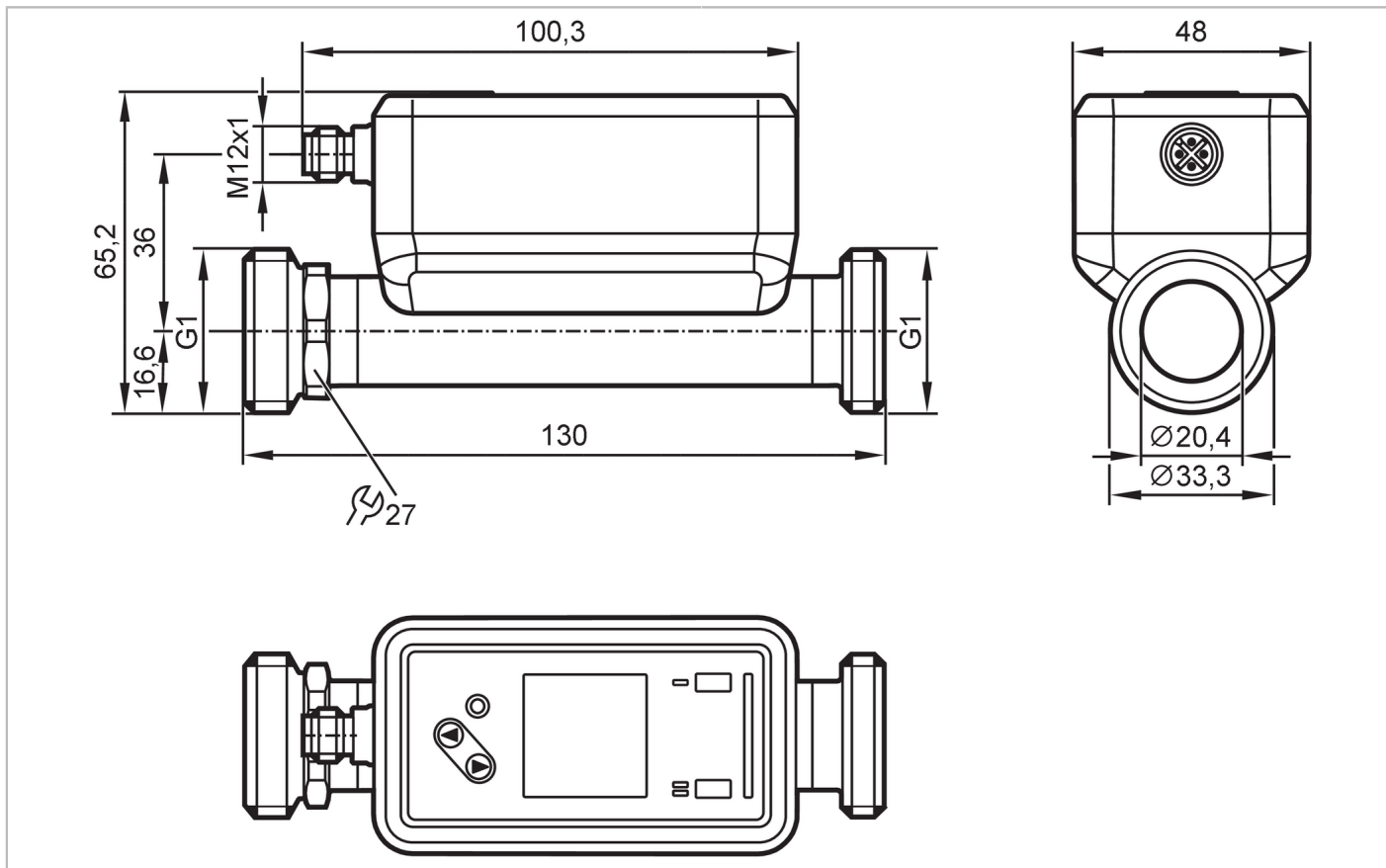


# SU8021



## Ultrasonic flow meter

SUR11XXBFRKG/US



ACS CE PA CRN cUL<sub>us</sub> LISTED IO-Link KTW/W270 NSF LISTED Reg31

### Product characteristics

Measuring range	1...240 l/min	0.06...14.4 m <sup>3</sup> /h	16...3804 gph	0.26...63.4 gpm
Process connection	threaded connection G 1 external thread DN25			

### Application

Special feature	gold-plated contacts			
Media	ultra-pure water; water; water-based media			
Note on media	water-based media: for media with >10 % additives, the repeatability is the only available value			
Medium temperature	-20...100 °C		-4...212 °F	
Min. burst pressure	150 bar		15 MPa	
Pressure rating	100 bar		10 MPa	
Vacuum resistance [mbar]	-1000			
MAWP (for applications according to CRN)	82.8 bar		8.28 MPa	

### Electrical data

Operating voltage [V]	18...32 DC; (to SELV/PELV)			
Current consumption [mA]	< 75			
Protection class	III			
Reverse polarity protection	yes			
Power-on delay time [s]	5			
Measuring principle	ultrasonic			

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Inputs				
Inputs	counter reset			
Outputs				
Total number of outputs	2			
Output signal	analog signal; pulse signal; analog signal; IO-Link; frequency signal; diagnostic signal; totalizer switching signal			
Electrical design	PNP/NPN			
Output function	normally open / closed; (configurable)			
Max. voltage drop switching output DC [V]	2			
Permanent current rating of switching output DC [mA]	100			
Switching frequency DC [Hz]	0...10000			
Analog current output [mA]	4...20			
Max. load [Ω]	500			
Pulse output	flow rate meter			
Short-circuit protection	yes			
Type of short-circuit protection	yes (non-latching)			
Overload protection	yes			
Measuring/setting range				
Measuring range	1...240 l/min	0.06...14.4 m <sup>3</sup> /h	16...3804 gph	0.26...63.4 gpm
Display range	-288...288 l/min	-17.28...17.28 m <sup>3</sup> /h	-4565...4565 gph	-76.08...76.08 gpm
Resolution	0.1 l/min	0.001 m <sup>3</sup> /h	1 gph	0.02 gpm
Set point SP	2.3...240 l/min	0.139...14.4 m <sup>3</sup> /h	37...3804 gph	0.61...63.4 gpm
Reset point rP	1.1...238.8 l/min	0.064...14.325 m <sup>3</sup> /h	17...3784 gph	0.28...63.07 gpm
Analog start point ASP	-240...192 l/min	-14.4...11.522 m <sup>3</sup> /h	-3804...3044 gph	-63.4...50.73 gpm
Analog end point AEP	-192...240 l/min	-11.522...14.4 m <sup>3</sup> /h	-3044...3804 gph	-50.73...63.4 gpm
Low flow cut-off LFC	1...12 l/min	0.06...0.72 m <sup>3</sup> /h	16...190 gph	0.26...3.17 gpm
Frequency end point, FEP	48.1...240 l/min	2.889...14.4 m <sup>3</sup> /h	763...3804 gph	12.72...63.4 gpm
Frequency at the end point FRP [Hz]	1...10000			
Volumetric flow quantity monitoring				
Pulse length [s]	0.002...2			
Pulse value	0.02...99990000 l; 0.005...26414563.515 gal			
Temperature monitoring				
Measuring range	-20...100 °C		-4...212 °F	
Display range	-44...124 °C		-47.2...255.2 °F	
Resolution	0.1 °C		0.1 °F	
Set point SP	-19.6...100 °C		-3.2...212 °F	
Reset point rP	-20...99.6 °C		-4...211.2 °F	
Analog start point	-20...76 °C		-4...168.8 °F	
Analog end point	4...100 °C		39.2...212 °F	
Frequency start point, FSP	-20...76 °C		-4...168.8 °F	
Frequency end point, FEP	4...100 °C		39.2...212 °F	
Frequency at the end point FRP [Hz]	1...10000			

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Accuracy / deviations		
Flow monitoring		
Accuracy (in the measuring range)		$\pm (1,0 \% MW + 0,5 \% MEW)$
Repeatability		$\pm 0,2 \% MEW$
Temperature monitoring		
Accuracy [K]		$\pm 2,5 (Q > 5 \% MEW)$
Temperature coefficient [% of the span / 10 K]		0,2
Reaction times		
Flow monitoring		
Response time [s]		$< 0,25; (dAP = 0, T09)$
Damping process value dAP [s]		0...5
Temperature monitoring		
Dynamic response T05 / T09 [s]		5,7 / 86
Software / programming		
Diagnostic functions		direction of flow detection; signal quality
Interfaces		
Communication interface		IO-Link
Transmission type		COM2 (38,4 kBaud)
IO-Link revision		1.1.3
SDCI standard		IEC 61131-9: 2013-07
Profiles	BLOB	Binary Large Object transfer
	Common - I&D	Identification and Diagnosis
Required master port class		A
Process data analog		3
Process data binary		2
Min. process cycle time [ms]		9.6
IO-Link process data (cyclical)	<b>Function</b>	<b>bit length</b>
	totalizer	32
	Flow monitoring	32
	Temperature monitoring	32
	status	4
	Output 1	1
	Output 2	1
Supported DeviceIDs	<b>Type of operation</b>	<b>DeviceID</b>
	default	1463
Operating conditions		
Ambient temperature [°C]		-20...60
Storage temperature [°C]		-25...80
Protection		IP 65; IP 67
Tests / approvals		
EMC	DIN 61326-1:2021	
CPA approval	model number	002US
	accuracy class	1,5

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Shock resistance	DIN IEC 68-2-27	20 g (11ms)
Vibration resistance	DIN IEC 68-2-6	20 g (10...2000Hz)
MTTF [years]		160
UL approval	UL approval number	I034
	File number UL	E174189
Pressure equipment directive	can be used for group 2 fluids; group 1 fluids on request	

Mechanical data		
Weight [g]		496.8
Housing		rectangular
Type of mounting		inlet pipe length 5xDN; outlet pipe length 1xDN
Dimensions [mm]		130 x 48 x 65.2
Material		housing: stainless steel (1.4404 / 316L); Display: PFA; sealing Display: FKM; connector: PBT
Materials (wetted parts)		Pipe section: stainless steel (1.4404 / 316L); Process connection sealing: NBR fiber-reinforced Gasket
Process connection		threaded connection G 1 external thread DN25
Surface characteristics Ra/Rz of the wetted parts		Ra < 1.25 µm

Displays / operating elements		
Display		Color display 1,44", 128 x 128 pixels
	Switching function	2 x LED, yellow
	diagnosis	1 x LED, three-color

Accessories	
Items supplied	Gasket 2, Centellen package insert

Remarks	
Remarks	MW = Measured value MEW = Final value of the measuring range pulse and totalizer signal are only available for one of the two outputs the accuracy indications are adhered to over the entire application area
Pack quantity	1 pcs.

Electrical connection	
Connector: 1 x M12; coding: A; Contacts: 4, gold-plated	
	

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### Connection



OUT1/IO-Link: Switching output Volumetric flow quantity monitoring  
Switching output Temperature monitoring  
Pulse output quantity meter  
Frequency output Volumetric flow quantity monitoring  
Frequency output Temperature monitoring  
signal output Preset counter

OUT2/InD: Switching output Volumetric flow quantity monitoring  
Switching output Temperature monitoring  
Pulse output quantity meter  
analog output flow  
analog output temperature  
signal output Preset counter  
Input counter reset

Colors to DIN EN 60947-5-2

Core colors  
BK= black  
BN= brown  
BU= blue  
WH= white

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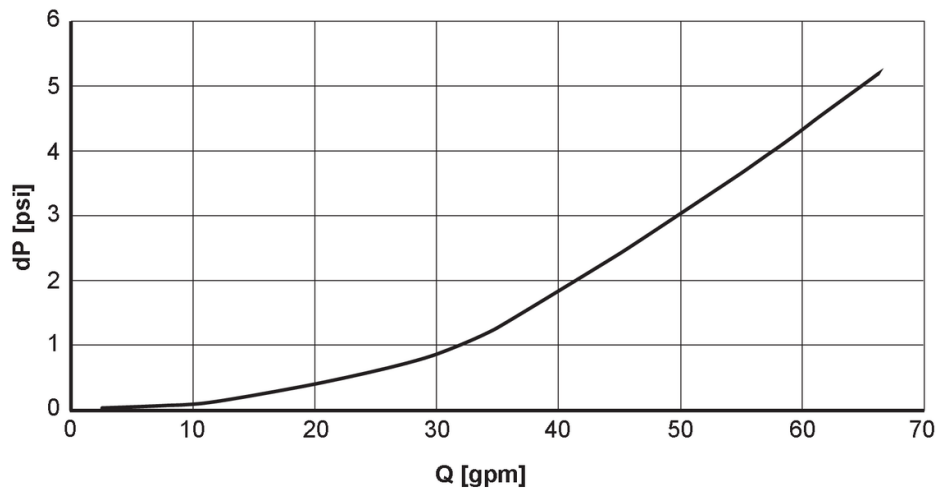
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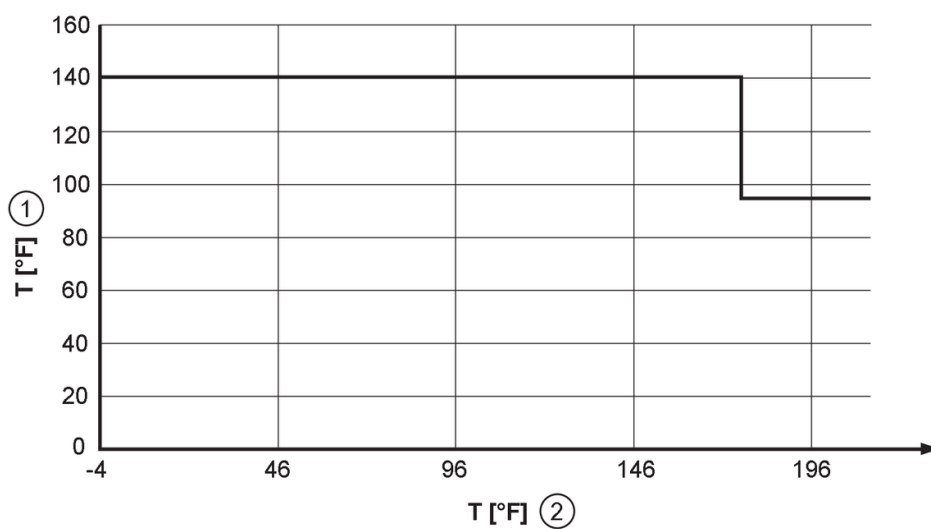
### Diagrams and graphs

Note on pressure loss



dP Pressure loss  
[psi]  
Q volumetric flow quantity  
[gpm]

derating ambient temperature



1 Ambient temperature  
2 Medium temperature